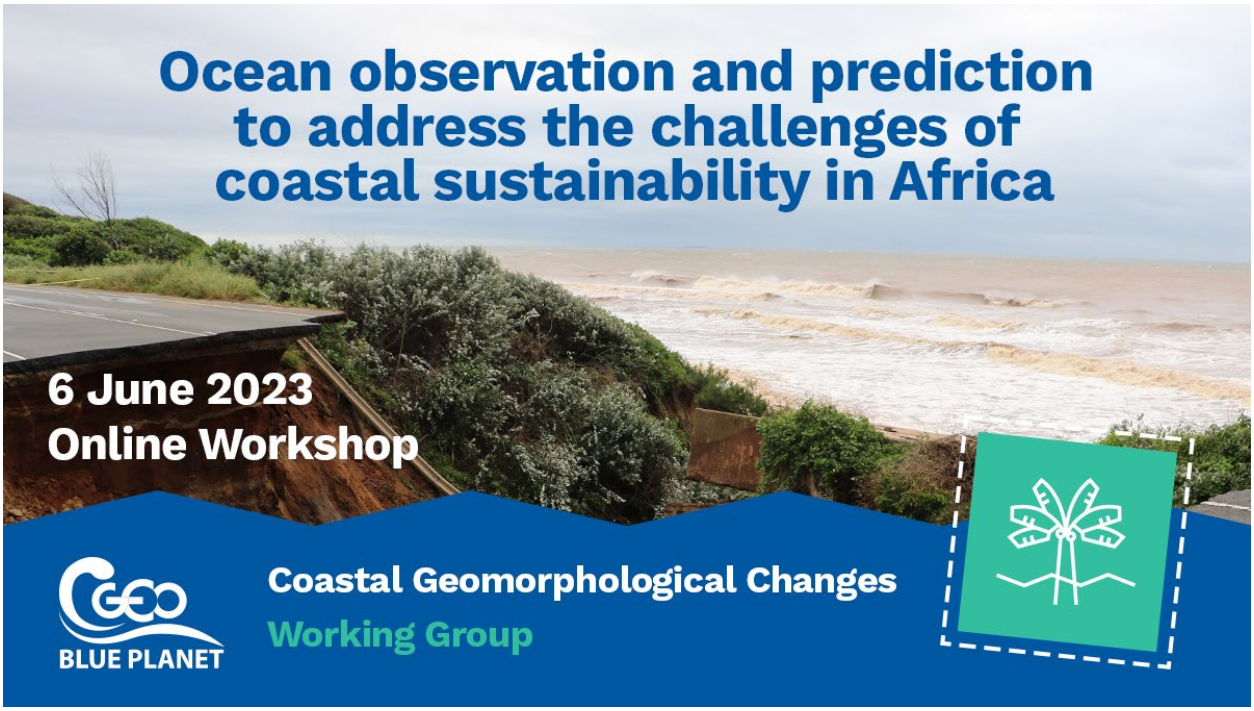
GEO BLUE PLANET

OCEAN OBSERVATION & PREDICTION TO ADDRESS CHALLENGES OF COASTAL SUSTAINABIALITY IN AFRICA

SUMMARY REPORT

Online event | 6 June 2023

info@geoblueplanet.org www.geoblueplanet.org @GEOBluePlanet



The GEO Blue Planet workshop on ocean observation and prediction to address coastal sustainability in Africa took place online on **6 June 2023**. The 3-hour workshop brought together **44 participants from 14 countries**, representing UN bodies, regional organisations, coastal stakeholders, and practitioners and national groups working on coastal monitoring and management.

This workshop is the first of two events, supported by GEO Blue Planet's Working Group on Coastal Geomorphological Changes, to explore the potential role of ocean observation and prediction in addressing stakeholders needs aligned with the Africa Blue Economy Strategy and the Ocean Decade Africa Roadmap. This preparatory workshop served to provide an overview of Earth observation (EO) based tools and solutions for monitoring coastal challenges. Different stakeholders also shared their needs and priorities for EO-based data, tools and services to inform policy, support sustainable coastal development and management, and coastal resilience in the face of climate change and increasing human activities.

Context

According to the United Nations (UN), coastal zones are home to around 40% of the world's population and to many megacities. They also contain diverse natural habitats that support an abundance of marine life, providing innumerable benefits and

services to society and to the entire planet. It is thus essential to observe, understand and protect this multifaceted environment.

Africa is particularly subject to coastal hazards with the highest rates of population growth and coastal zone urbanisation in the world, especially in sub-Saharan countries in Western and Eastern Africa. A recent example, the exceptionally powerful and long-lived tropical cyclone Freddy (February to March 2023) highlighted the continent vulnerability with over 2.9 million people estimated to be affected by Freddy's storm surge and flooding in Madagascar, Mozambique, and Malawi. However, WMO Services Director estimated that the death toll has been limited by early warnings, which are based on the observation and forecasting of both the atmospheric and oceanic environments.

The importance of ocean observation and prediction to better understand African coastal areas, to protect local ecosystems and populations, to evaluate and predict the impact of coastal hazards and provide support to the development of a sustainable regional blue economy and of the needed infrastructures has never been more urgent.

This online workshop is a preparatory event for an upcoming in-person workshop in Kenya in January 2024, with the objective to provide an overview of some of the existing EO-based tools, services and solutions for monitoring coastal challenges in Africa. The event also to identify key requirements and priorities for supporting implementation of sustainable coastal services and strategies to safeguard communities against coastal hazards.

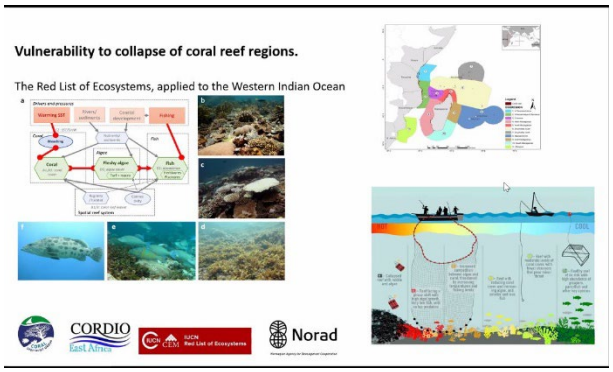
The expected outcomes are to gather feedback from the different stakeholders, including providers of EO based services and tools to:

- **Identify the most important societal and scientific drivers of different regional coastal development, and**
- **shaping the relevant coastal challenge topics to be addressed by the GEO Blue Planet's coastal geomorphological changes working group and at the upcoming in-person event**

Introduction & Keynotes

The event opened with an introduction by GEO Blue Planet EU Coordinator, Audrey Hasson who gave an overview of the event, and a general presentation of GEO Blue Planet and its coastal geomorphological changes working group launched this year. This was followed by two keynote presentations from Ahmed Mohamed (UNEP) on the GO Blue Project and David Obura from CORDIO East Africa.

The UNEP/ UN Habitat Go Blue Project: Connecting People, Cities and the Ocean: Innovative Land-Sea Planning and Management for a Sustainable and Resilient Kenyan Coast. www.goblue.co.ke



CORDIO East Africa, an African hub for marine science and conservation in the western Indian Ocean, with focus on climate vulnerability, marine ecosystem research, including monitoring coral reefs and sea level rise https://cordioea.net/

In the Q&A session that followed centred on difficulties in accessing data or data-based information and tools for the management of coastal projects, and how can these difficulties be overcome. Some of the challenges raised include difficulties in collecting and accessing accurate and reliable in-situ marine and coastal data in the region as well as limited socio-economic data. Adding to this, is the complexity of the available Earth observation datasets, difficult to interpret and understand, thus limiting integration in decision-making.

Some actions to overcome these challenges include:

- assessing the needs and priorities of stakeholders to be able to provide adapted data and derived services
- capacity development and training for coastal project managers and local authorities to allow them to be able to find the relevant data, information and tools available and to interpret them
- training, particularly offered by NGOs, needs to build on existing initiatives over the long-term and not once off and isolated
- development of centralised data management infrastructures
- partnerships with international, regional and national organisations to share and access data

Examples of EO-based data, products and services for coastal areas

The next session started with 5 flash presentations on coastal EO-based data and forecasting services/products with examples of applications to support coastal systems monitoring and management. Representative from GMES and Africa/ Marine and Coastal Areas Management in North and West Africa Consortium (MarCNoWA), Digital Earth Africa, the European Marine Observation and Data Network (EMODnet), the Copernicus Marine Service and Copernicus Coastal Hub.

EMODnet
European Marine Observation and Data Network

emodnet.ec.europa.eu/en

Provides in situ marine open and free data from coast to open ocean, covering 7 thematics, including bathymetry, human activities and covering global ocean. In terms of specific coastal services, on top of data layers available, produce data products, such as composite maps, digital terrain model for bathymetry, increasingly high resolution for the coastal region and for seabed habitats.

Copernicus Marine Service

marine.copernicus.eu
(available in English, French & Portuguese)

Provides open and free satellite, in situ and modelled data (e.g. sea level, waves) and products on coastal zones in high resolution, indicators, data visualisation tools (MyOcean Viewer) and use case applications.
The products can also be used by boundary conditions for regional or high-resolution coastal models to be able to make own predictions. Also opening a call for applications for satellite bathymetry to improve coastal area knowledge.

Digital Earth AFRICA

www.digitalearthafrica.org

Coastline Monitoring Service, using satellite data combined with tidal modelling to map the location of coastline for entire African continent, about 60,000km over past 20 years. Interactive maps interface, visualise and translate years of satellite imagery into information on growth and erosion of coastlines across the continent. Also provide access to global mangrove watch data and suite of analytical tools and workflows.

Copernicus Coastal Thematic Hub

https://www.coastal.hub.copernicus.eu/

Provides open and free access to a selection of coastal Earth observation data from the Copernicus Sentinel satellites and all Copernicus Service for European coastal zones.

GMES and Africa MarCNoWA

https://gmes.rmc.africa/

Provides services and tools on ocean monitoring, safety at sea, fisheries (IUU, potential fishing zones), costal monitoring & mapping, oil spill monitoring

Understanding needs and priorities for EO-based data and services

In the second part, superusers and stakeholders of earth observation data and derived products and services, presented their needs for data and information, including Mika Odido from the IOC Sub Commission for Africa and the Adjacent Island States, Mahaman Bachir Saley from the African Union Commission, Bathelemy Batieno and Nathan Majwa, from the UNEP Abidjan and Nairobi conventions respectively, Anne Laure Beck from Argans/World Bank, Joanna Akrofi from UNEP GEMS Ocean, and Phoebe Oduor from AfriGEO. The event also featured a networking virtual space via Kumospace and interactive polls to continue discussions and gather feedback.

A panel discussion followed to unpack the questions below with some key points raised:

What could be the most efficient actions to take to increase data use for decision making?

- Need for capacity building on evidence-based decision making, so that decision makers can effectively use the data in formulating policy, strategy and implementation plans.
- Important role of communication to build awareness and uptake of EO-based solutions, including how to find and access data, and know how to interpret it and use it to guide decisions and actions.

What specific services/tools do you develop to support the coastal sustainability development?

- The development of sustained in situ observations and networks in Africa, especially for coastal zones, was also a recurring point.
- Need for central data portals at least by region where countries can share their data on, as well as services to transform data in actionable information. This would catalyse the uptake of data in decision-making.

How do you work with users or stakeholders to co-design service to meet their needs?

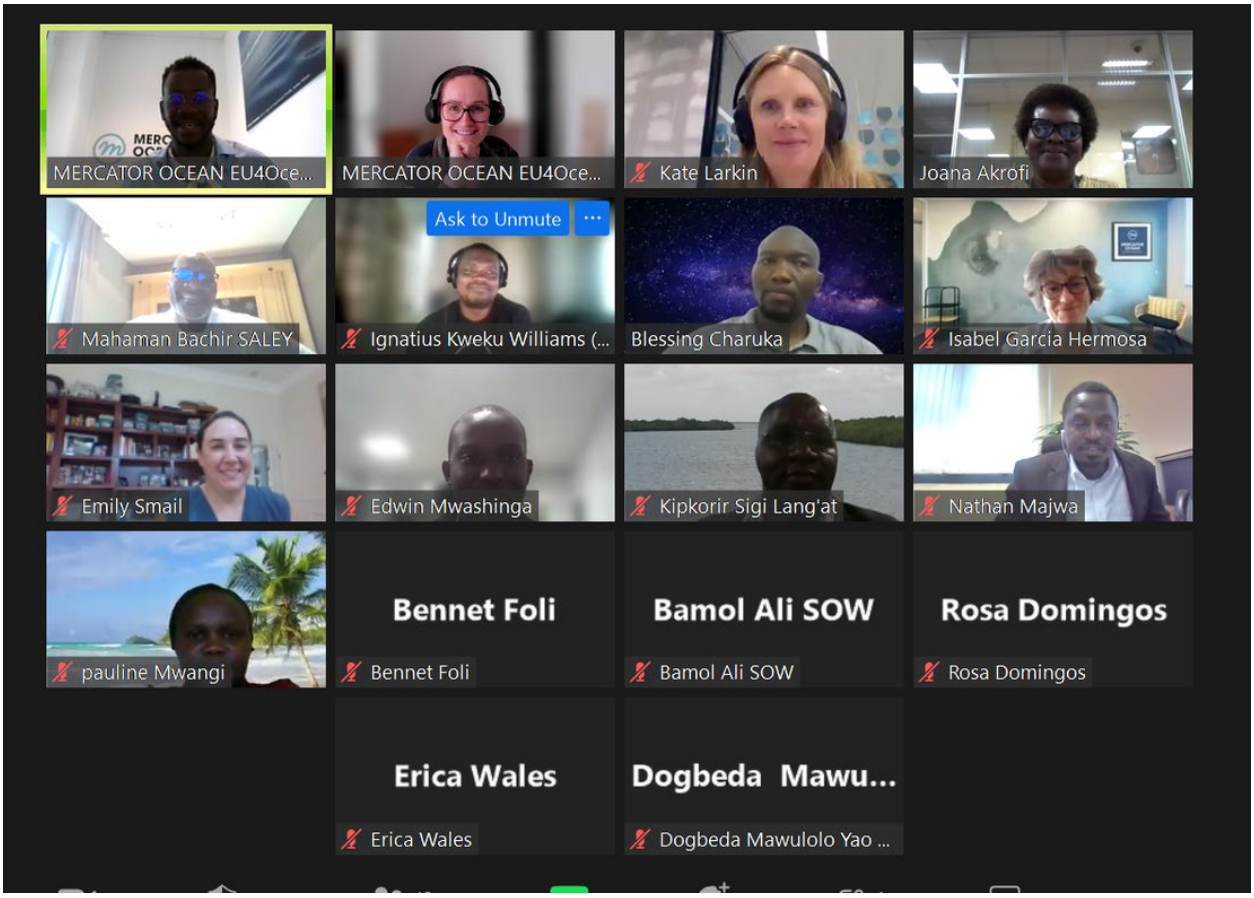
- It is crucial to understand the needs of different categories of users and stakeholder and also assess the landscape of existing services and products out there to avoid poor user uptake and duplication of efforts.
- The community needs to move away from designing and developing products and services without getting input from users and stakeholders along the process.
- Co-design, co-development and continuous feedback on user experience is essential to ensure that products respond to user needs in an evolutive way.
- This needs to be accompanied by dissemination of information to ensure users and stakeholders are on board from the start, and also that they understand the scope of the solutions presented. Capacity building to ensure the maximal uptake of EO-based derived services and tools.

How do you think international cooperation could leverage more effective use of EO data?

- International cooperation is needed at two levels, that of the stakeholders and that of the users. This is the niche of UNEP GEMS Ocean, which is working to bridge the gap between science and policy, to downstream all the assets (observing, monitoring, prediction) to where the member states are, and to provide interface between science and policy. Developing use cases, can be at national or local level and then can be upscaled to global scale. GEMS Ocean endorsed as UN Ocean Decade Programme and is part of DCC Ocean Prediction, which is trying to bring ocean forecasting systems to the regional seas.
- International cooperation can facilitate capacity building, for example through student exchanges between countries, and transfer of new innovative products that can be updated and used in other regions.
- International cooperation is vital for knowledge transfer and technology transfer but also to bridge science and policy.

Key points from discussions:

- Upstream assessment of user needs and priorities,
- Including users and stakeholders in the co-design of products, services and tools, through a collaborative and consultive development process to ensure relevance and uptake
- development of centralised data and information access point to facilitate uptake and sharing
- Need for communication and long-term capacity building to develop capabilities in using EO-based products to address coastal challenges
- Strengthened international cooperation for knowledge and technology transfer



Networking space

The meeting offered two virtual networking sessions to allow for participants to meet and have open discussions via the Kumospace web-based application.

Next steps

The outcomes of this workshop will inform future actions of the Coastal Geomorphology Working Group and help prepare the in-person event to be held in Nairobi, Kenya in the second half of January 2024, to continue discussions on elaborating stakeholders needs and priorities for EO-based services and tools to support coastal sustainability and resilience. This event will be accompanied by a day of training dedicated to using EO-based solutions to respond to coastal challenges with demonstrations of existing tools and services. The gathered input will be compiled in brief/white paper providing recommendations on the need for ocean and coastal observations and priority topics supporting coastal sustainability and resilience in Africa, targeting national and regional decision makers.

For more information and to access the workshop presentations, click here: https://geoblueplanet.org/ocean-observation-and-prediction-for-coastal-sustainability-in-africa/

6 JUNE WORKSHOP | AGENDA

Time	Presentations	Speakers
14:00 – 14:10	Introduction and overview of the: • GEO Blue Planet initiative • Coastal geomorphological changes Working Group • Workshop Introduction	Audrey Hasson GEO Blue Planet EU coordinator Mercator Ocean International
14:10 – 14:15	Interactive poll #1	
14:15 – 14:30	Keynote 1: The Go Blue Project – connecting people, cities and the Ocean	Ahmed Mohamed UNEP
14:30 - 14:45	Keynote 2: Coral reef and coastal vulnerability to climate change in East Africa	David Obura Coastal Oceans Research and Development in the Indian Ocean (CORDIO) East Africa
14:45 - 15:00	Panel Discussion	
	Interactive Zoom poll #2	
15:00 - 15:30	Discussion/ Networking with Kumospace web-based application	All participants
15:30 – 15:45	Break	

15:45 – 16:00	Flash introduction presentations from coastal services/ products providers with success story • GMES and Africa – Ignatius Williams (University of Ghana) • Digital Earth Africa – Lisa Rebelo • EMODnet – Kate Larkin (Seascape Belgium) • Copernicus Marine Service – Isabel Garcia Hermosa (Mercator Ocean International) Copernicus Coastal Hub – Audrey Hasson (Mercator Ocean International)	
16:00 – 16:20	Flash introduction presentation from stakeholders / superusers of EO systems to address coastal challenges: • IOC UNESCO Sub Commission for Africa and the Adjacent Island States – Mika Odido • African Union Commission – Mahaman Bachir Saley • AfriGEO – Phoebe Oduor (RCMRD) • World Bank /Argans – Anne-Laure Beck • UNEP GEMS Ocean and Coast – Joana Akrofi • Abidjan Convention – Bathelemy Batieno • Nairobi Convention – Nathan Majwa	
16:20 - 16:25	Interactive Zoom Poll #3	
16:25 – 16:45	Panel Discussion *(requirements in terms of stakeholder engagement, collaboration and co-design, and capacity building to tackle the coastal sustainability in Africa*)	
16:45 - 17:00	Discussion/ Networking via application KumoSpace	
17:00 – 17:05	Concluding remarks + Interactive Zoom Poll #4	